alberta's species at risk program

Weidemeyer's Admiral Conservation Management Plan

2012-2017

Alberta Species at Risk Conservation Management Plan No. 5

Government of Alberta

Weidemeyer's Admiral

Conservation Management Plan

2012-2017

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PREFACE

Albertans are fortunate to share their province with a diversity of wild species. A small number of these species are classified as *Species of Special Concern* because they have characteristics that make them particularly sensitive to human activities or natural events. Special conservation measures are necessary to ensure that these species do not become Endangered or Threatened.

Conservation management plans are developed for *Species of Special Concern* to provide guidance for land and resource management decisions that affect the species and their habitat. These plans are intended to be a resource tool for Sustainable Resource Development - Fish and Wildlife Division (SRD-FWD) and for provincial and regional land and resource management staff.

Conservation management plans provide background information including species biology, threats to species and habitat, and inventory/monitoring history. Plans also provide a goal, objectives, and actions (management recommendations). Management recommendations are typically categorised into inventory and monitoring needs; habitat management and conservation; education and communication; and additional management considerations as required.

Conservation management plans are generally prepared by an SRD-FWD biologist who has been designated as the provincial species lead. Writers from outside SRD-FWD are occasionally sought to prepare plans for species for which there is little in-house expertise. In order to ensure accuracy and utility, each plan is reviewed by a species expert and a designated provincial representative from SRD Forestry Division and/or Lands Division. In some cases there may be additional reviewers from staff, industry, and other agencies.

Conservation management plans are internal guidance documents. They are implemented under the guidance of the species lead and are "living" documents that can be revised at any time as required. Conservation management plans are more succinct than the recovery plans that are prepared for Endangered and Threatened species and do not involve participation of a multi-stakeholder team.

Conservation management plans are approved by the Director of Wildlife and/or Directory of Fisheries. Plans will be reviewed annually by the species lead and updated if necessary, and a more in-depth review will occur five years after a plan's approval.

EXECUTIVE SUMMARY

The Weidemeyer's admiral (*Limenitis weidemeyerii oberfoelli* Brown) is a *Species of Special Concern* in Alberta because its breeding range is limited and it is found only in the Milk River basin of southern Alberta. Its range is restricted by the extent of shrubby riparian habitat it requires, and even in suitable habitat it is relatively uncommon. Current status of populations is unknown and little is known about trends in population. These butterflies spend their lives feeding, courting and breeding in these areas and rarely wander outside of their range.

This plan recommends various ways to conserve Weidemeyer's admiral populations and habitat, including monitoring techniques and ways to avoid the degradation of their shrubby riparian habitats.

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TABLE OF CONTENTS

PREFACE iv

EXECUTIVE SUMMARY v

ACKNOWLEDGEMENTS v

1.0 INTRODUCTION 2
- 1.1 Breeding Biology, Distribution and Habitat Requirements 2
- 1.2 Threats to Populations 3
- 1.3 Provincial Monitoring History 4

2.0 GOALS AND OBJECTIVES 5
- 2.1 Goal 5
- 2.2 Objectives 5

3.0 MANAGEMENT ACTIONS 5
- 3.1 Inventory and Monitoring 5
- 3.2 Habitat Management 6
- 3.3 Research and Management 6
- 3.4 Education and Communication 7

4.0 SUMMARY 7

5.0 LITERATURE CITED 8

TABLE OF FIGURES

Figure 1. Weidemeyer's admiral distribution in Alberta (points indicate observations)....2

1.0 INTRODUCTION

The Weidemeyer's admiral (*Limenitis weidemeyerii oberfoelli*) is a *Species of Special Concern* in Alberta because of its limited breeding range within Alberta (Pohl et al. 2010; COSEWIC 2009). It is found in low numbers in suitable riparian habitat. This species is therefore at risk if its shrubby riparian habitats are lost or degraded. Current status of populations is unknown and little is known about population trends. This species is also listed as a Species of Special Concern under the federal *Species at Risk Act* (SARA).

The Endangered Species Conservation Committee's (ESCC) Initial Conservation Action Report (2006) for this species included the following recommendations:

1. Designate Weidemeyer's admiral as a *Species of Special Concern*
2. Integrate its management with programs such as MULTISAR and Operation Grassland Community
3. Conduct regular population surveys to determine status and trends

1.1 Breeding Biology, Distribution and Habitat Requirements

Weidemeyer's admiral resides in riparian areas throughout the Great Plains and desert regions of the United States, Mexico and in the extreme southern prairies of Alberta. In Alberta, its range is restricted to riparian and mid-elevation shrublands along the Milk River basin of the Grassland Natural Region (Austin and Murphy 1987; Bird et al. 1995), primarily in the Dry Mixedgrass subregion. Shrubby areas along with treed areas in coulees and valleys tend to be the preferred habitat (Kondla 1998, 2005). The species distribution in Alberta is split into two populations; the East population centered around the Pinhorn Grazing Reserve and the Onefour Heritage Research Station, and the West population surrounding Writing-on-Stone Provincial Park (Kondla 2005). Limited linkages are known to exist between the two populations; although increased search effort may reveal more linkages.

The Weidemeyer's admiral spends most of its life as a caterpillar on its primary host, Saskatoon (*Amelanchier alnifolia*) (Bird et al.1995). It has also been reported on trembling aspen (*Populus tremuloides*), chokecherry (*Prunus virginiana*), Drummond's willow (*Salix drummondiana subcoerulea*) (Scott 1986) and other species of *Salix* (Bird et al. 1995); however, specific host plants have not been confirmed in Alberta. These tree and shrub species are present in the riparian regions of the basin. Late instar larva overwinter in a hibernaculum, with adults emerging the following spring in June. It is univoltine (a species limited to one brood of offspring per year) in Alberta where there is a short growing season, although two flight periods (i.e., two broods) have been recorded in the USA (Scott 1986).

Starting in early June and extending into late July adults breed in shrubby riparian habitats along the Milk River (Bird et al. 1995). Adult male Weidemeyer's admirals have often been observed in "patrolling" behaviour (Pike 1987) while females tend to spend their time perched in shrubs or patrolling host plants as they search for oviposition sites (Pike 1987, Porter 1989, Kondla 2005). Males patrol early in the day and perch later in the day (Porter 1989). Studies suggest that adult male Weidemeyer's admirals require

territories that contain both adequate food resources and perches (Rosenberg 1984, 1989). Males were able to detect other Weidemeyer's admirals more quickly when there were higher perches that contained high quality food sources such as yellow-bellied sapsucker galleries in willow areas of 1.5 metres in height, or contained aphid-rich sites with suitable amounts of honeydew (Rosenberg 1989). Communities with taller plants have better vantage points for males to defend territories and detect and attract females. Additionally, a taller shrub community equates to larger, more vigorous shrubs and therefore increased food quality and quantity. Large shrubs are limited to riparian zones in the Grassland Natural Region; therefore, food availability and suitable breeding habitats are likely the reasons this species is restricted to the small areas of available habitat in the Milk River Basin.

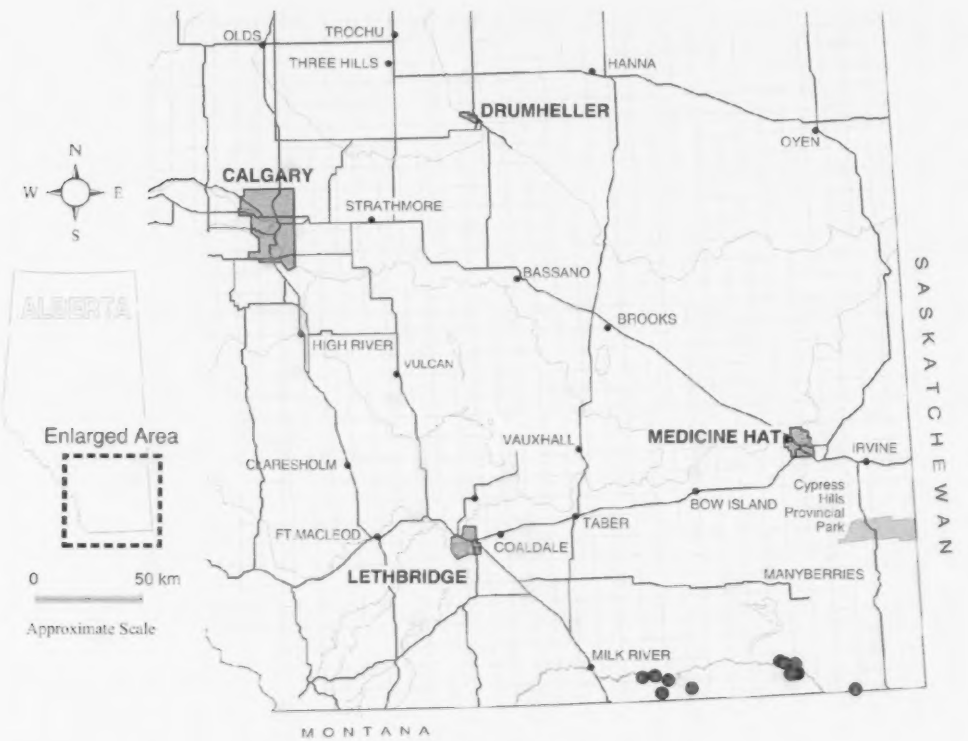

Figure 1. Weidemeyer's admiral distribution in Alberta (points indicate observations).

1.2 Threats to Populations

There are several threats to these butterfly populations in Alberta, all of which are related to their habitat, which is restricted to narrow bands of cottonwood-dominated forest along the Milk River. If unabated, these threats could lead to the extirpation of this species from Canada.

1.2.1 Human-Related Disturbance

A threat to habitat quality in the Milk River basin is overuse of the riparian woodlands by cattle. Excessive browsing and trampling of host plants as well as soil compaction result when livestock spend long periods of time in these areas during the growing season. Excessive browsing by livestock can cause pupae and larvae to become dislodged and lead to the mortality of these two immature stages (Kondla 2005).

1.2.2 Habitat Alteration

Habitat loss and alteration are major threats to the Weidemeyer's admiral in Alberta. The riparian cottonwood groves where this species lives will be under threat over the next century if flood regimes are not naturalized (Bradley and Smith 1986). Naturalized refers to a system where flood regimes follow natural seasonal events (necessary for cottonwood tree reproduction and growth) rather than those flood events imposed by anthropogenic activities such as dams. Overstory tree species, such as plains cottonwood, provide shade for the understory shrubs upon which Weidemeyer's admiral depends for feeding and breeding habitat.

1.2.3 Invasive Species

Another major threat to this species is the invasion of the Russian olive (*Elaeagnus angustifolia* L.), which is encroaching into Alberta from Montana. Russian olive outcompetes species such as plains cottonwood in riparian areas of the Milk River (Pearce and Smith 2001). If not controlled, this invasive plant could lead to the loss of these woodlands within this century (Pierce and Smith 2001), which would lead to the extirpation of the Weidemeyer's admiral.

1.3 Provincial Monitoring History

In Alberta, specific monitoring for this species has not occurred on a regular basis, although surveys have occurred over the years.

The full distribution of this species is not known, primarily because no regular provincial monitoring has occurred in Alberta (though annual butterfly counts have occurred at Writing-on-Stone Provincial Park). Records continue to be limited to a few locations within an 80 km long region that includes the Milk River, its tributaries, and the lower region of the Lost River.

2.0 GOALS AND OBJECTIVES

2.1 Goal

Maintain current distribution and breeding populations of Weidemeyer's admiral in Alberta.

2.2 Objectives

1. Inventory and monitoring: Monitor priority areas where Weidemeyer's admiral populations are known to exist and where prime habitat occurs along the Milk River valley to track population trends and conduct surveys to identify its distribution.

2. Habitat management: Implement appropriate habitat protection and management for both breeding and non-breeding habitat while improving our understanding of habitat requirements.

3. Research and management: Investigate ways to control harmful invasive pests such as Russian olive.

4. Education and communication: Improve education and communication with government, industry, public, and landowners about habitat requirements of the Weidemeyer's admiral.

3.0 MANAGEMENT ACTIONS

3.1 Inventory and Monitoring

Inventory work should be conducted along the Milk River, Lost River and other suitable locations where this species might reside, including both public and private lands, to determine species distribution, population estimates and population trends within Alberta. Efforts should also be made to identify habitat and/or genetic connections between the East and West populations of Weidemeyer's admiral and the Canadian and American populations.

Presence/absence surveys, using catch and release methods, should be conducted multiple times at each location during the flight period. When possible, a limited number of specimens should be collected from each new site to confirm presence and gather genetic material for future research (disposition of these specimens needs to be determined; donation to a University, such as the University of Alberta's Strickland Museum, is an option).

The possibility of surveying for the larvae phase of the species should be explored to assist in the determination of Alberta host plant species. Identifying host plants will assist in the protection and conservation of habitat for the Weidemeyer's admiral. These surveys should be limited to areas with known populations of Weidemeyer's admiral.

3.2 Habitat Management

Land disposition on which Weidemeyer's admirals are found includes national and provincial parks, crown land, and private land. The first step would be to conduct an Aerial Videography to assess habitat in riparian areas and mid-land along these basins. Onsite Riparian Health Assessments would follow to evaluate the overall health of suitable habitats and understand the impact of invasive species. Focus of habitat management for the species should be on the following: high quality habitat; potential habitat connections between known populations; and areas identified as requiring habitat improvement.

Beneficial Management Practices (BMPs) for the Weidemeyer's admiral should be developed by ASRD, in consultation with a variety of organizations, such as Cows and Fish. BMPs will help to maintain habitat by defining appropriate grazing pressure, rotations, timing and cattle distribution. These BMPs should be incorporated into local landholders' ranching operations to conserve and protect habitat for the Weidemeyer's admiral. Information on appropriate BMPs should be communicated through conservation organizations already operating in the Milk River Basin (e.g., MULTISAR).

Some management practices are already in existence that help to reduce human disturbance and habitat alteration, including: a Protective Area Notation (PNT) for the Milk River Basin that prevents surface disturbance within a quarter section of the river; and no upstream oil and gas activity within the river valley.

The risk of habitat loss due to changes in flood regimes needs to be addressed using a collaborative approach between all responsible governments and agencies (i.e., Government of Alberta, Government of Canada and relevant agencies in the USA). Education on the negative impacts of unnatural flooding events such as loss of cottonwood forests, changes in species composition, and impacts on biodiversity, is required to inform management decisions. Policy to address or mitigate these impacts is also required.

3.3 Research and Management

Genetic research would help to determine whether genetic material is being exchanged between neighbouring populations, both within and outside Alberta. This could indicate if habitat corridors need to be managed for this species.

Research is needed to find ways to eliminate invasive species such as Russian olive. There is some evidence that pathogens such as Phomopsis canker (*Phomopsis elaeagni*), Verticillium wilt (*Verticillium albo-atrum*) or another more host-specific organism could be used as an effective biological control for Russian olive. However, all precautions should be taken when assessing biological control options to avoid the introduction of another non-native pest. Identified methods should be included with BMPs, and education and conservation programs identified in sections 3.2 and 3.4.

3.4 Education and Communication

It is essential to maintain communication with government, public, industry and landowners regarding Weidemeyer's admiral populations and habitat needs. Many agencies including ASRD, Alberta Agriculture and Rural Development (AARD), Alberta Tourism, Parks and Recreation (ATPR) - Parks Division, municipal departments, and other agencies interested in participating in outreach should collaborate to develop outreach programs for the Weidemeyer's admiral. Education should emphasize habitat conservation of shrubby riparian areas containing host plants. Monitoring programs should have an educational component that includes school talks, interpretative talks at provincial parks, and displays at park and community events. Wildlife and habitat managers, range agrologists, and riparian specialists should work closely with industry and landowners to raise awareness regarding the importance of maintaining Weidemeyer's admiral habitat, and should co-operate with other initiatives when possible. Education and communication needs to provide an ecosystem perspective and identify how the Weidemeyer's admiral is one of several species dependent on riparian and shrub land habitat in the Milk River Basin.

Education efforts should be evaluated based on the number of participating agencies, programs, and people reached, and should be reviewed in five years to address whether they were effective.

4.0 SUMMARY

Weidemeyer's admiral in Alberta is limited to riparian areas within the Milk River basin. This species is vulnerable to certain types of habitat alteration and human disturbance, warranting continued monitoring and habitat protection. One of the biggest challenges is that this species has a small and restricted range, making habitat management paramount. Current issues that affect the survival of this butterfly include overuse of habitat by cattle, invasive species, and most importantly, water management in both the Canadian and American portions of the Milk River basin. Education must accompany management actions, and these should be supported by long-term monitoring.

This management plan will be reviewed in five years, and may be updated prior to that time if new relevant information becomes available. The review will be lead by FWD, in consultation with entomology researchers, participating agencies, and industry.

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